UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,430	05/04/2001	Jeffrey Thomas Kreulen	ARC920000023US1	7814

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EXAMINER
RIES, LAURIE ANNE

ART UNIT	PAPER NUMBER
2176	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/848,430	KREULEN ET AL.
	Examiner	Art Unit	
	Laurie Ries	2176	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _13 September 2004_.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-25_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-25_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on _13 September 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☐ All b)☐ Some * c)☐ None of:
      1.☐ Certified copies of the priority documents have been received.
      2.☐ Certified copies of the priority documents have been received in Application No. _____.
      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This action is responsive to communications: amendment, filed 13 September 2004, to the original application filed 4 May 2001.

Claims 1-25 are pending. Claims 1, 5, 9, 13, and 15 are independent claims. Claims 18-25 are newly added claims.

Response to Arguments

Applicant's arguments, see amendment, filed 13 September 2004, with respect to 35 U.S.C. 101 have been fully considered and are persuasive. The rejections of claims 1, 5, 9, and 15 under 35 U.S.C. 101 have been withdrawn.

Applicant's arguments, see amendment, filed 13 September 2004, with respect to the rejection(s)of claim(s) 1-17 under 35 U.S.C. 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 5, 7, 9, 11, 13, 15, and 17-25 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Pirolli (U.S. Patent 5,895,470) in view of Call (U.S. Publication

2002/0165707 A1).

As per claims 5, 9, and 13, Pirolli discloses an apparatus, program instructions

and method of converting, organizing, and representing in a computer memory a

document corpus containing an ordered number of documents (See Pirolli, Column 7,

lines 35-39). Pirolli does not disclose expressly developing a first uninterrupted listing of

integers to correspond to an occurrence of terms in the document corpus. Call discloses

developing an uninterrupted array of integers corresponding to an occurrence of terms

(See Call, Figure 1, element 135, and Page 3, paragraph 0029). Pirolli and Call are

analogous art because they are from the same field of endeavor of processing

electronic text data. At the time of the invention it would have been obvious to a person

of ordinary skill in the art to include the array of integers corresponding to an occurrence

of terms of Call with the method of Pirolli. The motivation for doing so would have been

to permit more efficient execution of processing functions of the type typically performed

by data processors (See Call, Page 1, paragraph 0010). Therefore, it would have been

obvious to combine Call with Pirolli for the benefit of permitting more efficient execution

of processing functions of the type typically performed by data processors to obtain the

invention as specified in claims 5, 9, and 13.

As per claim 15, Pirolli discloses data converter for organizing and representing

in a computer memory a document corpus containing an ordered number of documents,

for use by a data mining applications program requiring occurrence-of-terms data (See

Pirolli, Column 13, lines 18-46), the representation to be based on terms in a dictionary

previously developed for the document corpus and where each term in the dictionary

has associated therewith a corresponding unique integer (See Pirolli, Pages 6-7,

paragraphs 0076-0083).). Pirolli also discloses means for developing an uninterrupted

listing of the unique integers to correspond to the occurrence of the dictionary terms in

the document corpus (See Pirolli, Column 7, lines 33-62). Pirolli does not disclose

expressly developing an uninterrupted listing of integers to correspond to an occurrence

of dictionary terms in the document corpus. Call discloses developing an uninterrupted

array of integers corresponding to an occurrence of terms (See Call, Figure 1, element

135, and Page 3, paragraph 0029). Pirolli and Call are analogous art because they are

from the same field of endeavor of processing electronic text data. At the time of the

invention it would have been obvious to a person of ordinary skill in the art to include the

array of integers corresponding to an occurrence of terms of Call with the method of

Pirolli. The motivation for doing so would have been to permit more efficient execution

of processing functions of the type typically performed by data processors (See Call,

Page 1, paragraph 0010). Therefore, it would have been obvious to combine Call with

Pirolli for the benefit of permitting more efficient execution of processing functions of the

type typically performed by data processors to obtain the invention as specified in claim 15.

As per claim 17, Pirolli and Call disclose the limitations of claim 15 as described above. Pirolli also discloses developing an uninterrupted listing for the entire document corpus, the uninterrupted listing containing, in sequence, the location of each corresponding document in the first uninterrupted listing (See Pirolli, Page 5, paragraph 0051).

As per claim 1, Pirolli discloses method of converting a document corpus containing an ordered number of documents into a compact representation in memory of occurrence data (See Pirolli, Column 7, lines 35-39). Pirolli does not disclose expressly developing a first vector for the entire document corpus, the first vector being a listing of integers corresponding to terms in the documents such that each document in the document corpus is sequentially represented in the listing. Call discloses developing an uninterrupted array of integers corresponding to an occurrence of terms (See Call, Figure 1, element 135, and Page 3, paragraph 0029). Pirolli and Call are analogous art because they are from the same field of endeavor of processing electronic text data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the array of integers corresponding to an occurrence of terms of Call with the method of Pirolli. The motivation for doing so would have been to permit more efficient execution of processing functions of the type typically performed by data processors (See Call, Page 1, paragraph 0010). Therefore, it would have been obvious to combine Call with Pirolli for the benefit of permitting more efficient execution

of processing functions of the type typically performed by data processors to obtain the invention as specified in claim 1.

As per claims 3, 7, and 11, Pirolli and Call disclose the limitations of claims 1, 5, and 9 as described above. Call also discloses rearranging, or sorting, in the first vector, the order of the unique integers within the data for each document so that the terms are in alphabetical order which would case all identical unique integers to be adjacent (See Call, Page 5, paragraph 0051). Pirolli and Call are analogous art because they are from the same field of endeavor of processing electronic text data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the sorting of terms of Call with the method of Pirolli and Call. The motivation for doing so would have been to allow the terms to be displayed in sorted order (See Call, Page 5, paragraph 0051). Therefore, it would have been obvious to combine Call with Pirolli and Call for the benefit of allowing the terms to be displayed in sorted order to obtain the invention as specified in claims 3, 7, and 11.

As per claims 18, 20, 22, and 24, Pirolli and Call disclose the limitations of claims 1, 5, 9 and 13 as described above. Call also discloses developing a dictionary, or term table, including terms contained in the document corpus and associating with each dictionary term, an integer to be uniquely corresponding to the dictionary term, the uniquely corresponding integers used in the first uninterrupted listing (See Call, Pages 6-7, paragraphs 0076-0083). Pirolli and Call are analogous art because they are from the same field of endeavor of processing electronic text data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the

term table of Call with the method of Pirolli and Call. The motivation for doing so would have been to allow a user to search the text for a term matching a particular term (See Call, Page 7, paragraph 0082). Therefore, it would have been obvious to combine Call with Pirolli and Call for the benefit of allowing a user to search the text for a term matching a particular term to obtain the invention as specified in claims 18, 20, 22, and 24.

As per claims 19, 21, 23 and 25, Pirolli and Call disclose the limitations of claims 1, 5, 9 and 13 as described above. Pirolli also discloses developing a second uninterrupted listing for the entire document corpus, the second uninterrupted listing containing, in sequence, the location of each corresponding document in the first uninterrupted listing (See Pirolli, Column 7, lines 33-62).

Claims 2, 6, 10, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pirolli (U.S. Patent 5,895,470) in view of Call (U.S. Publication 2002/0165707 A1) as applied to claims 15, 19, 21, 23, and 25 above, and further in view of Cohen (U.S. Patent 5,950,189).

As per claims 2, 6, 10, 14, and 16, Pirolli and Call disclose the limitations of claims 15, 19, 21, 23, and 25 as described above. Pirolli and Call do not disclose expressly developing a third uninterrupted listing for the entire document corpus, the third uninterrupted listing containing a sequential listing of floating point multipliers, each floating point multiplier representing a document normalization factor for a corresponding document in the document corpus. Cohen discloses developing a

normalized vector containing floating point multipliers (See Cohen, Column 11, lines 1-

39). Pirolli, Call and Cohen are analogous art because they are from the same field of

endeavor of processing electronic text data. At the time of the invention it would have

been obvious to a person of ordinary skill in the art to include the normalized vectors of

Cohen with the method of Pirolli and Call. The motivation for doing so would have been

to accurately identify the high matches of document terms and their values (See Cohen,

Column 9, lines 28-30). Therefore, it would have been obvious to combine Cohen with

Pirolli and Call for the benefit of accurately identifying the high matches of document

terms and their values to obtain the invention as specified in claims 2, 6, 10, 14 and 16.

Claims 4, 8, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Pirolli (U.S. Patent 5,895,470) in view of Call (U.S. Publication 2002/0165707 A1)

and Cohen (U.S. Patent 5,950,189) as applied to claims 2, 6, and 10 above, and further

in view of Jagadish (U.S. Patent 6,401,088 B1).

As per claims 4, 8, and 12, Pirolli, Call and Cohen disclose the limitations of

claims 2, 6, and 10 as described above. Pirolli, Call and Cohen do not disclose

expressly that the normalization factor is the number of occurrences of a specific term in

the document that represents the reciprocal of the square root of the sum of squares of

all term occurrences in the document. Jagadish discloses calculating a normalization

factor using an algorithm that can be refined to determine the number of term

occurrences in a document (See Jagadish, Figure 6, and Column 8, lines 14-46).

Pirolli, Call, Cohen and Jagadish are analogous art because they are from the same

field of endeavor of processing electronic text data. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the normalization factor of Jagadish with the method of Pirolli, Call and Cohen. The motivation for doing so would have been to obtain a quick estimate of the number of times a particular substring, or term, occurs (See Jagadish, Column 1, lines 23-24). Therefore, it would have been obvious to combine Jagadish with Pirolli, Call and Cohen for the benefit of obtaining a quick estimate of the number of times a particular substring, or term, occurs to obtain the invention as specified in claims 4, 8 and 12.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Tsai (U.S. Patent 5,818,877) discloses a method for reducing storage requirements for grouped data values.

- Wacholder (U.S. Patent 6,167,368) discloses a method and system for identifying significant topics of a document.

- Appelt (U.S. Patent 6,601,026 B2) discloses information retrieval by natural language querying.

- Mizutani (U.S. Patent 5,749,953) discloses a document search method.

- Hazelhurst (U.S. Patent 5,974,412) discloses an intelligent query system for automatically indexing information in a database and automatically categorizing users.

- Buckley discloses the optimization of inverted vector searches.

- Lee discloses combining multiple evidence from different properties of weighting schemes.

- Viles discloses term weights in dynamic information retrieval.

- Fagan discloses automatic phrase indexing for document retrieval.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurie Ries whose telephone number is (571) 272-4095. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild, can be reached at (571) 272-4090.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LR

JOSEPH FEILD
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